MASTER COURSE OUTLINE
Prepared By: Date: Sep 2017

COURSE TITLE
Intro to Chemistry

GENERAL COURSE INFORMATION

Dept.: CHEM&	Course Num: 121	(Formerly:)
CIP Code: 40.0501	Intent Code: 11	Program Code: N/A
Credits: 5		
Total Contact Hrs Per Qtr.: 66		
Lecture Hrs: 44	Lab Hrs: 22	Other Hrs: 0
Distribution Designation: Lab Science LS		

COURSE DESCRIPTION (as it will appear in the catalog)
This course is designed primarily for the allied health student. In addition this class serves students wanting an introductory chemistry course prior to the full year CHEM& 161, 162, 163 sequence. Topics include basic chemical vocabulary, atomic structure, stoichiometry, periodic behavior of elements and compounds, gases, liquids, solids, solutions, water and equilibria. Laboratory exercises are designed to reinforce classroom learning as well as providing hands on experience with chemical reactions. Relevance of course material to current practices in chemistry is a fundamental focus.

PREREQUISITES
Passing grade in MATH 098 or placement in MATH 099. A passing grade in high school chemistry or completion of CHEM& 105 is recommended.

TEXTBOOK GUIDELINES
A current introductory chemistry text with an allied health focus. A good example would be *An Introduction to Chemistry* by Mark Bishop. The text used must have departmental approval.

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:
1. Apply the concepts of accuracy and precision to scientific measurements.
2. Solve chemistry problems using the patterns in the periodic table.
3. Describe matter (states, composition, classification, changes) at the particle-level.
4. Describe or interpret chemical reactions using chemical symbols and equations.
5. Name ionic, binary covalent, and acids according to IUPAC rules of nomenclature.
6. Solve quantitative problems using appropriate law, equation, or strategy.
7. Represent matter using chemical formulas, Lewis structures, and/or electron configurations.
8. Demonstrate appropriate laboratory techniques and safety in carrying out laboratory exercises.

INSTITUTIONAL OUTCOMES
IO2 Quantitative Reasoning: Students will be able to reason mathematically.

IO3 Human Relations/Workplace Skills: Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills.

COURSE CONTENT OUTLINE

The Scientific Method
Measurement and Units
Reporting Values from Measurements

Solids, Liquids, and Gases
The Chemical Elements
The Periodic Table of the Elements
The Structure of the Elements

Classification of Matter
Compounds and Chemical Bonds
Molecular Compounds
Naming Binary Covalent Compounds
Ionic Compounds

Chemical Reactions and Chemical Equations
Solubility of Ionic Compounds and Precipitation Reactions

Characteristics of Acids
Acid Nomenclature
Summary of Chemical Nomenclature
Strong and Weak Bases
pH and Acidic and Basic Solutions
Arrhenius Acid-Base Reactions
Brønsted-Lowry Acids and Bases

An Introduction to Oxidation-Reduction Reactions
Oxidation Numbers
Types of Chemical Reactions
Voltaic Cells

Energy
Chemical Changes and Energy

Unit Analysis
Rounding and Significant Figures
Density and Density Calculations
Percentage and Percentage Calculations
A Summary of the Unit Analysis Process
Temperature Conversions

Relating Mass to Number of Particles
Molar Mass and Chemical Compounds
Relative Masses of Elements and Compounds
Determination of Empirical and Molecular Formulas

Equation Stoichiometry
Applications of Equation Stoichiometry
Molarity and Equation Stoichiometry

The Mysterious Electron
Multi-Electron Atoms

A Detailed Look at Molecules and the Formation of Covalent Bonds
Drawing Lewis Structures
Resonance
Molecular Geometry from Lewis Structures VSEPR

Gases and Their Properties
Ideal Gas Calculations
Equation Stoichiometry and Ideal Gases
Dalton's Law of Partial Pressures

Liquid-Gas systems — An Introduction to Dynamic Equilibrium
Boiling Liquids
Particle-Particle Attractions

Why Solutions Form
Fats, Oils, Soaps, and Detergents
Saturated Solutions and Dynamic Equilibrium
Solutions of Gases in Liquids

Collision Theory: A Model for the Reaction Process
Rates of Chemical Reactions
Reversible Reactions and Chemical Equilibrium
Disruption of Equilibrium

The Nucleus and Radioactivity
Uses for Radioactive Substances
Nuclear Energy

DEPARTMENTAL GUIDELINES *(optional)*
Evaluation will be accomplished by a combination of graded homework, examination, quizzes and laboratory performance. Laboratory work will account for 1 credit of the 5 credit class, or 20% of the final grade.

PO5 should be assessed: Students will be able to solve problems by gathering, interpreting, combining and/or applying information from multiple sources.

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DIVISION CHAIR APPROVAL **DATE**